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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/009,239	11/25/2002	Kyongtae T. Bae	3047-8852	6332

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EXAMINER
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DANG, DUY M

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/009,239

Applicant(s)

BAE ET AL.

Examiner

Duy M. Dang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 April 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 and 22-25 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-16 and 22-25 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/12/05 + 12/30/02 + 7/30/02

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Invention of Group I, claims 1-16 and 22-25 in the reply filed on April 19, 2006 is acknowledged.
2. Applicant's amendment filed on April 19, 2006 to cancel claims 17-21 has been entered and made of record.

### ***Information Disclosure Statement***

3. The information disclosure statement (IDS) submitted on December 20, 2002 and July 30, 2002 has been considered and made of record. Copies of the initialized IDS are accompanied herein.
4. The information disclosure statement filed on October 12, 2005 does not fully comply with the requirements of 37 CFR 1.98(b) because it lacks issue date for all U.S Patents listed thereon. Therefore, examiner only considered references related to U.S. patent application publications, foreign patents, and non patent literature documents listed thereon and copies of partially initialized IDS are accompanied herein.

### ***Specification***

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
6. The disclosure is objected to because of the following reasons:  
  
It lacks a brief description for figure 5c. See MPEG 608.01(f) and 37 CFR 1.74.  
  
At page 4 of the specification, lines 27-28 and 30, "a&b" ought to be changed to "a & b".

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At page 5 of the specification, lines 1, 3, 5, 7, and 9, “a&b” ought to be changed to “a & b”; and line 11, “&c” ought to be changed to “b & c”.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-16 and 22-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

There is insufficient antecedent basis for the following claimed limitations:

-In claim 1, “the later” in line 2; and “said compressed data” in lines 2-3;

-In claim 3, “the maximum” in line 2 and “the random noise” in line 3;

-In claims 5-8, “the data” in lines 1-2 and “the order” in line 2; in addition, the limitation of “the data” is unclear to what it refers to? Does it refer to projection data, compressed data, compressed data set, or any other data? Clarification is required;

-In claim 9, “said data” in lines 2-3; in addition, the limitation of “said data” is unclear to what it refers to? Does it refer to projection data, compressed data, compressed data set, or any other data? Clarification is required;

-In claim 15, “the patient’s anatomy” in line 2 and “the uncompressed data” in line 3;

-In claim 16, “the product” and “the tube” in line 2; in addition, the “mAs” recited in line 2 is unclear to what it refers to? Clarification is required;

-In claim 22, “the later” in line 2;

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-In claim 24, “the order” in line 2; and

-In claim 25, “the patient’s anatomy” in lines 2-3 and “the uncompressed data” in line 3.

Claims 2, 4, 10-14, and 23 are also rejected for the same reasons as above as being dependent upon the rejected based claims 1 and 22.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-15, 22, and 24-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Macq et al. (“Lossless compression for 3D PET”, IEEE Transactions on Nuclear Science, Vol. 41, No. 6, December 1994, pages: 2765-2770. Referred as “Macq” hereinafter).

Regarding claim 1, Macq teaches a method for compressing CT scan digital project data (see abstract, for example, “lossless compression of positron emission tomography (PET) sonogram data” and “PET scanners”), which compression allows for later reconstruction of medically useful images from said compressed data (see abstract, for example, “PET data lossless compression and decompression”), said method comprising: the steps of assembling the CT scan digital projection data in a format suited for compression (see abstract, for example, “lossless compression of positron emission tomography (PET) sonogram data”, “PET scanners”, and “PET data lossless compression and decompression”), and compressing the CT scan digital projection data with compression software into a compressed data set (see the use of C program

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for compression and uncompression mentioned in last 3 lines of section V (Conclusions) in right column of page 2769).

Regarding claim 2, Macq further teaches wherein the compression software provides lossless data compression (see the use of C program for compression and uncompression mentioned in last 3 lines of section V (Conclusions) in right column of page 2769).

Regarding claim 9, Macq further teaches storing said compressed data along with an identifying index for any previously taken views from said data (see “memory” mentioned in right column of page 2769, section V (Conclusions), first paragraph, last 3 lines).

Regarding claim 10, Macq further teaches raw data taken from at least one scan (see coding the difference scans mentioned in right column of page 2769 lines 3-4).

Regarding claim 11, Macq further teaches stripping the raw data out of any proprietary format prior to compression thereof (see encoding the difference mentioned in page 2766 left column lines 3-10 and figure 1. Note that difference refers to raw data stripped).

Regarding claim 12, Macq further teaches transmitting the compressed data set to a computer for storage and/or retrieval (see 1<sup>st</sup> paragraph of section I (Introduction) mentioned in left column of page 2765; “bandwidth” and “memory” mentioned in right column of page 2769, section V (Conclusions), first paragraph, last 3 lines. Note that bandwidth inherently refers to transmission. Also refer to 2<sup>nd</sup> paragraph of left column in page 2768).

Regarding claims 13-14, Macq further teaches reconstructing an image from the compressed data set includes decompressing the compressed data set (see abstract and 2<sup>nd</sup> paragraph of left column in page 2768; 2<sup>nd</sup> of section I (Introduction) mentioned in left column of page 2765).

Regarding claims 15 and 25, Macq further teaches determining a compression ratio based on at least in part on the portion of the patient's anatomy represented in the uncompressed data (see figure 7: note compression factor and compression ratio shown in figure 9).

Regarding claim 22, this claim is also rejected for the same reason as set forth in claim 1 above.

Regarding claim 24, Macq further teaches compressing said raw CT scan digital projection data on the order of between about 12:1 to about 15:1 (see figure 9: note frame order from 0 to 30).

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Macq in view of Weinberger et al. ("From LOCO-I to the JPEG-LS Standard", IEEE 1999, pages: 68-72. Art of record, IDS filed on July 30, 2002. Referred as "Weinberger" hereinafter).

The advanced statements as applied to claims 1-15, 22, and 24-25 with regard to Macq above are incorporated herein. Macq fails to teach the use of JPEG-LS. However, using such JPEG-LS for compression is well known in the art as evidenced by Weinberger (see abstract). Furthermore, Weinberger suggests that JPEG\_LS provides better compression ratios and lower complexity level in his abstract.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use JPEG-LS for compression as taught by Weinberger in combination with Macq for that reasons.

***Allowable Subject Matter***

13. Claims 3-8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

With regard to claim 3, the prior art of record fails to teach or suggest the claimed features as recited in claim 3. Furthermore, claims 4-8 depend from claim 3 and thus are allowable for the same reasons.

***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Examples of lossy compression of CT image data are Cook (USPN 6,215,903) and Pelanek et al. (USPN 5,724,582).

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duy M. Dang whose telephone number is 571-272-7389. The examiner can normally be reached on Monday to Friday from 6:00AM to 2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C. Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

dmd  
July 7, 2006



**DUY M. DANG**  
**PRIMARY EXAMINER**